

# A Comprehensive Approach to Addressing Nonpoint Source Sediment from County Roads

Five Counties Salmonid  
Conservation Program (5C)

A stylized, layered mountain range graphic in shades of teal and blue, located in the bottom right corner of the slide.


# Background



## Five Counties:

- Del Norte
- Humboldt
- Mendocino
- Siskiyou
- Trinity

# Sediment Reduction Program

- ◆ Develop Inventory Software (DIRT)
  - ◆ Identify Sources of Erosion on County Roads
  - ◆ Prioritize Sites
  - ◆ Develop Implementation Projects
  - ◆ Improve Road Maintenance Policies & Provide Annual Training
  - ◆ Monitor Sites and Implementation
- 
- A stylized, dark teal mountain range graphic is positioned in the bottom right corner of the slide, partially overlapping the text of the last bullet point.

# DIRT

- ◆ Based on PWA protocols for private roads modified for county roads
- ◆ GIS mapping
- ◆ DIRT v2.0





# Site Survey

Microsoft Access - [Dataform : form]

File Edit View Insert Format Records Tools Window Help

Type a question for help

Tahoma 8

General Crossings and Channels Culverts Stream Crossing Volumes Landslides Chronic Surface Erosion Spot Sites Treatments Implementation

Use F7 key to spell check

**General Information**

Site #:  Road Name:

Date Inventoried:  Road Width:

Inquirer(s):  Surface:

County:  Mileage:

Watershed:  Milepost Marker:

CALWA#:

See sketch filed in:  Roll and Frame:

Comment:

**Site Evaluation**

Site Type:

Erosion Potential:

Treatment Immediacy:

Engineer used verify treatment? ☐

**Summary of Sediment Savings**

Landslide Yield (cyds):

Stream Crossing Yield (cyds):

Miscellaneous Surface erosion (cyds):

Decadal Chronic Surface erosion (cyds):

Total Future Yield (cyds):

**GIS Information**

GPS X Coordinate:  Map X Coordinate:

GPS Y Coordinate:  Map Y Coordinate:

GPS EPR:  GPS DOP:

Record: 1 of 1

Numerical format (e.g., 200 or 200.1) is best filed in field

NIM

# Stream Crossings





# Landslides



Trinity Alps Road



# Chronic Surface Erosion





# Treatments

Microsoft Access - [Dataform : Form]

File Edit View Insert Format Records Tools Window Help

Type a question for help

General Crossings and Channels Culverts Stream Crossing Volumes Landslides Chronic surface erosion Spill Sites **Treatments** Implementation

**General treatment information**

No treatment needed? ☐

Requires treatment of nearby site(s) ☐

Other treatment:

Extra treatment or critical dimensions are described in comments ☐

Treatment immediacy:

Controllability:

Complexity:

Treatment comments:

**Fill/slope Stabilization**

Armor Fill Face or Surface Type:

Armor Area (sq ft):

Volume of fill to reconstruct (cu ft):

**Road surface treatments**

Clean or Cut Ditch (ft):

Outslope and retain ditch (ft):

Outslope and fill ditch (ft):

Install rolling dips (#):

Remove berm (ft):

# of times to breach berm:

Volume berm to remove (cu):

Length of ditch to fill (ft):

Pave road (ft):

Rock road (ft):

Pave or Rock surface (sq ft):

Replace DRC length (ft):

Install DRC length (ft):

# of DRCs to install:

Downspout type:

**Stream**

Culvert Treatment:

Culvert Maintenance

Install/Replace culve

Install/Replace culve

Emergency overflow

Emergency overflow

Install Flared Inlet di

Install Xing downspout

Xing downspout diam

Xing downspout leng

# of Xing downspout

Install critical tap

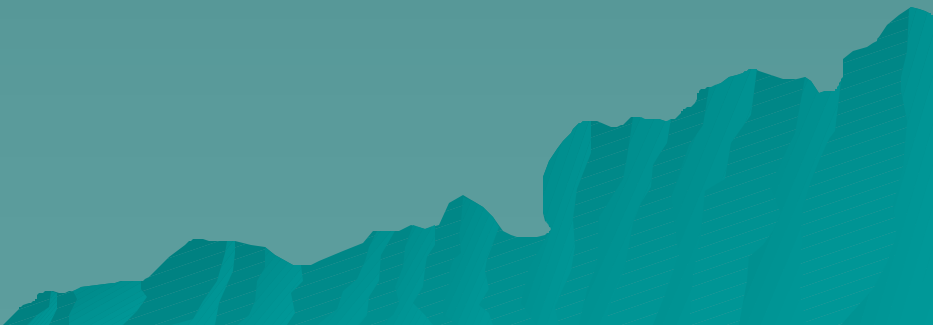
Install Armored cons

Dimensions (ft x ft):

Record: 1 of 1

Does the site not require any treatments? NUM

# Results

- ◆ 1,746 miles inventoried to date
  - ◆ 2.4 million yd<sup>3</sup> total potential sediment delivery
  - ◆ 7,293 total sites
  - ◆ Russian River Inventory within Mendocino County completed using DIRT v2.0
- 
- A stylized, layered mountain range graphic in shades of teal and blue, located in the bottom right corner of the slide.



# DIRT Site Types

67%

23%

4%

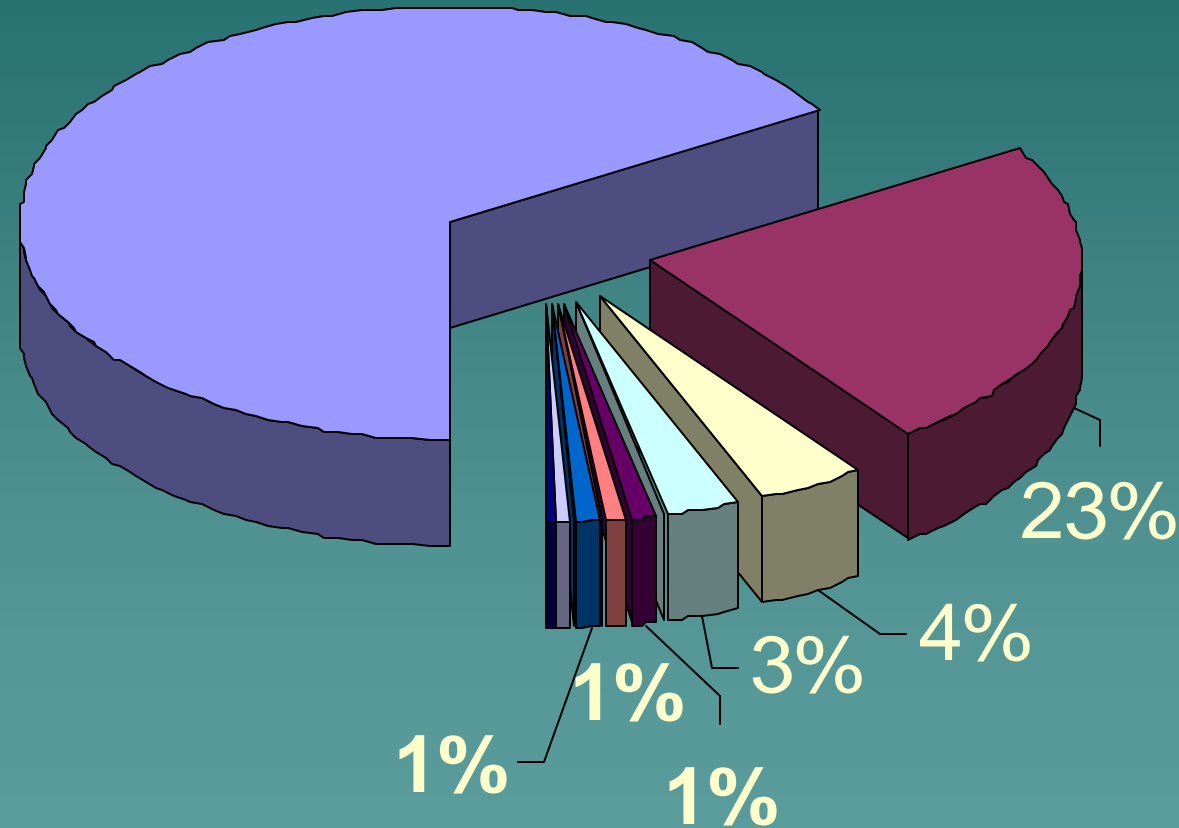
3%

1%

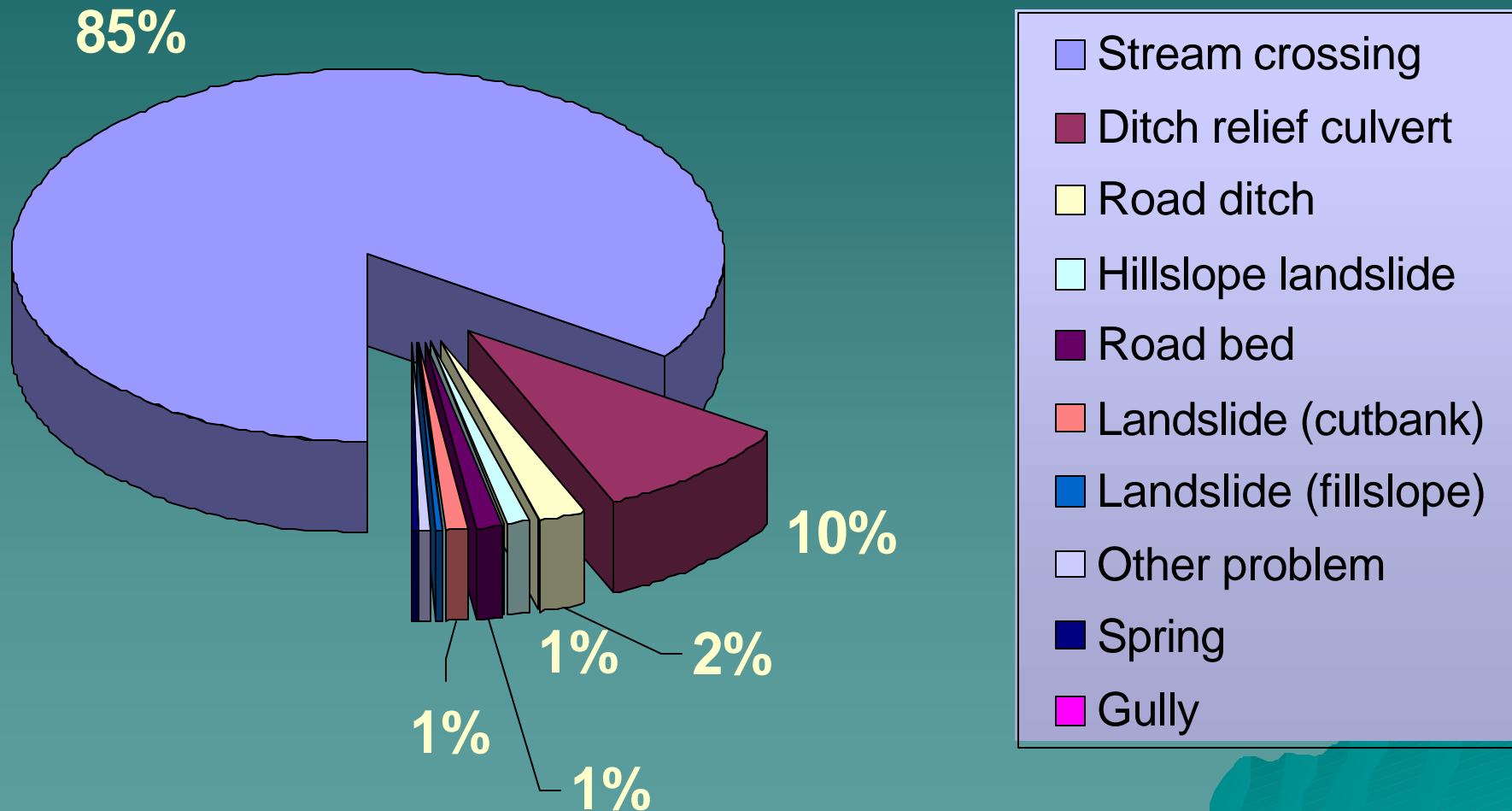
1%

1%

- Stream crossing
- Ditch relief culvert
- Road ditch
- Road bed
- Other problem
- Spring
- Landslide (fillslope)
- Landslide (cutbank)
- Hillslope landslide
- Gully

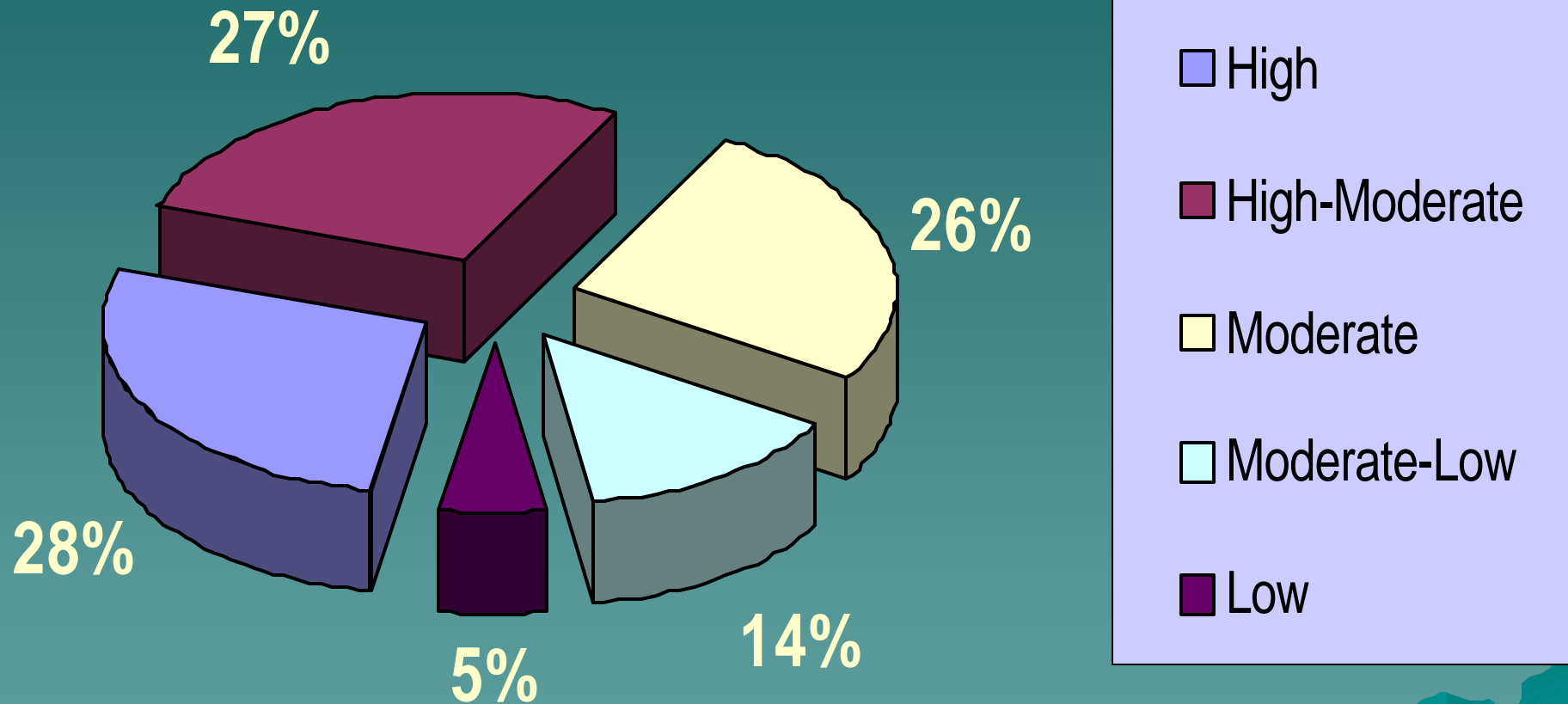


# DIRT Total Potential Sediment by Site Type





# DIRT Total Potential Sediment by Immediacy



# DIRT Factors for Prioritization

- ◆ Immediacy
- ◆ Erosion Potential
- ◆ Total Volume of Potential Sediment
- ◆ Treatments
  - Complexity
  - Cost





# Site Prioritization

- ◆ Analysis of DIRT results
- ◆ Biological Factors
- ◆ Regulatory Factors
- ◆ Economic Factors
- ◆ Management Factors



Regulatory Criteria		
Factor	Minimum Score	Maximum Possible Score
DIRT Inventory Prioritization	0	150
Biological Criteria	0	70 for barrier sites; 70 for non-barrier sites
Water Quality Violation	0	50 for an existing violation
TMDL Criteria	0	10 for TMDL implementation plan; 5 for TMDL allocation plan
Sub-Total For Biological and Watershed Factors	0	280 points maximum
County Funding Match	0	50 (function of % of county match)
Management and Design Complexity	0	20
Permits Needed	0	15
Other Management Considerations	0	35
Sub-Total For Management Factors		120 points maximum
Total		400 points maximum

Economic Criteria		
Factor	Minimum Score	Maximum Possible Score
DIRT Inventory Prioritization	0	150
Biological Criteria	0	70 for barrier sites; 70 for non-barrier sites
Water Quality Violation	0	50 for an existing violation
TMDL Criteria	0	10 for TMDL implementation plan; 5 for TMDL allocation plan
Sub-Total For Biological and Watershed Factors	0	280 points maximum
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Management Criteria		
Factor	Minimum Score	Maximum Possible Score
DIRT Inventory Prioritization	0	150
Biological Criteria	0	70 for barrier sites; 70 for non-barrier sites
Water Quality Violation	0	50 for an existing violation
TMDL Criteria	0	10 for TMDL implementation plan; 5 for TMDL allocation plan
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# Implementation Projects



Dutch Creek Road, Trinity County



# Implementation Projects



Ten Mile Road,  
Mendocino County





# Roads Maintenance Manual

A WATER QUALITY AND  
STREAM HABITAT PROTECTION  
MANUAL  
for  
COUNTY ROAD MAINTENANCE  
IN NORTHWESTERN  
CALIFORNIA WATERSHEDS

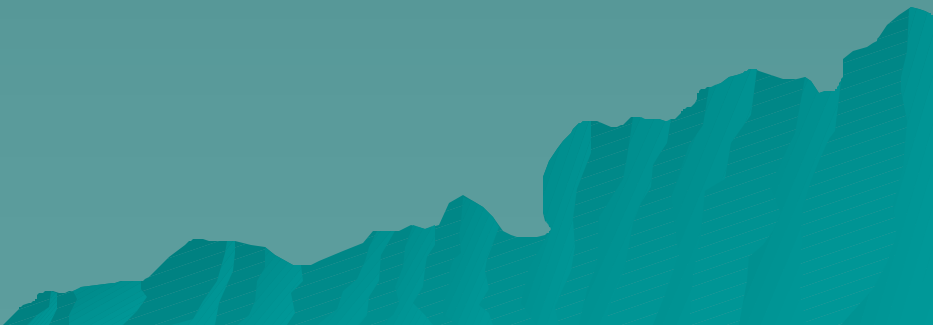


Prepared for the  
Five Counties Salmonid Conservation  
Program

ADMINISTRATIVE DRAFT

September 2002

# Roads Maintenance Manual

- ◆ BMP #3-A-1.5: Outsloping to improve road drainage
  - ◆ BMP #3-A-1.9: Surface native roads
  - ◆ BMP #3-B-3.4 : Water drafting screens
- 
- A stylized, dark teal silhouette of a mountain range is positioned in the bottom right corner of the slide, partially overlapping the bottom edge of the text area.

# Roads Maintenance Manual

## ◆ BMP #5-B-1.4: Reuse and recycling of concrete and asphalt



- Trinity County surfaced > 10 miles with recycled Cal-Trans asphalt grindings.
- Del Norte County purchased a grinder to recycle asphalt for road surfacing.



# Training

- ◆ Manual Practice 11-A:
  - Conduct annual training on roads, water quality, and salmon habitat



# Monitoring

The screenshot shows a Microsoft Access form titled "Dataform : Form1". The form has a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help) and a toolbar. Below the menu bar is a tabbed interface with tabs for General, Crossings and Channels, Culverts, Stream Crossing Volumes, Landslides, Chronic Surface Erosion, Spoil Sites, Treatments, and Implementation. The "Implementation" tab is selected, and it contains a sub-tab labeled "Implementation Information".

The "Implementation Information" sub-tab contains the following fields:

- Treatment progress: A dropdown menu.
- Total cost: A text box with the value "\$0.00".
- Funding source: A text box.
- General implementation comments: A large text area.
- Miscellaneous implementation treatments: A text box.
- Monitoring: A text box.
- Monitoring status: A text box.
- Stabilization treatments: A text box.
- Road surface modification: A text box.
- Road surfacing: A text box.
- Road related pipes: A text box.
- Diana (in), length (ft), and type of new or replacement pipes: A text box.
- Culvert Repair or Removal: A text box.
- Other Crossing Pipes Treatments: A text box.
- Other Crossing Treatments: A text box.

At the bottom of the form, there is a status bar showing "Records: 14 of 1" and a "Form View" button.

- ◆ Photo Point
- ◆ DIRT
- ◆ Reporting
- ◆ Re-inventory
- ◆ Long Term

# Conclusion

- ◆ 5C Salmonid Conservation Program would like to thank the following:
  - Pacific Watershed Associates
  - Sari Sommarstrom & Associates
  - Mendocino Water Agency
  - California Coastal Salmon Recovery Program – CDFG
  - Proposition 204 grant program – SWRCB
  - NOAA Fisheries Grant Programs